

The background of the slide is a scenic photograph of a calm lake. In the foreground, the water reflects the sky and the surrounding forest. A small, rocky island with a few evergreen trees sits in the middle of the lake. The far shore is covered in a dense forest of tall, thin evergreen trees, with some bare, white trunks visible. In the distance, rolling hills and mountains are visible under a clear blue sky.

PROJECT KICKOFF MEETING

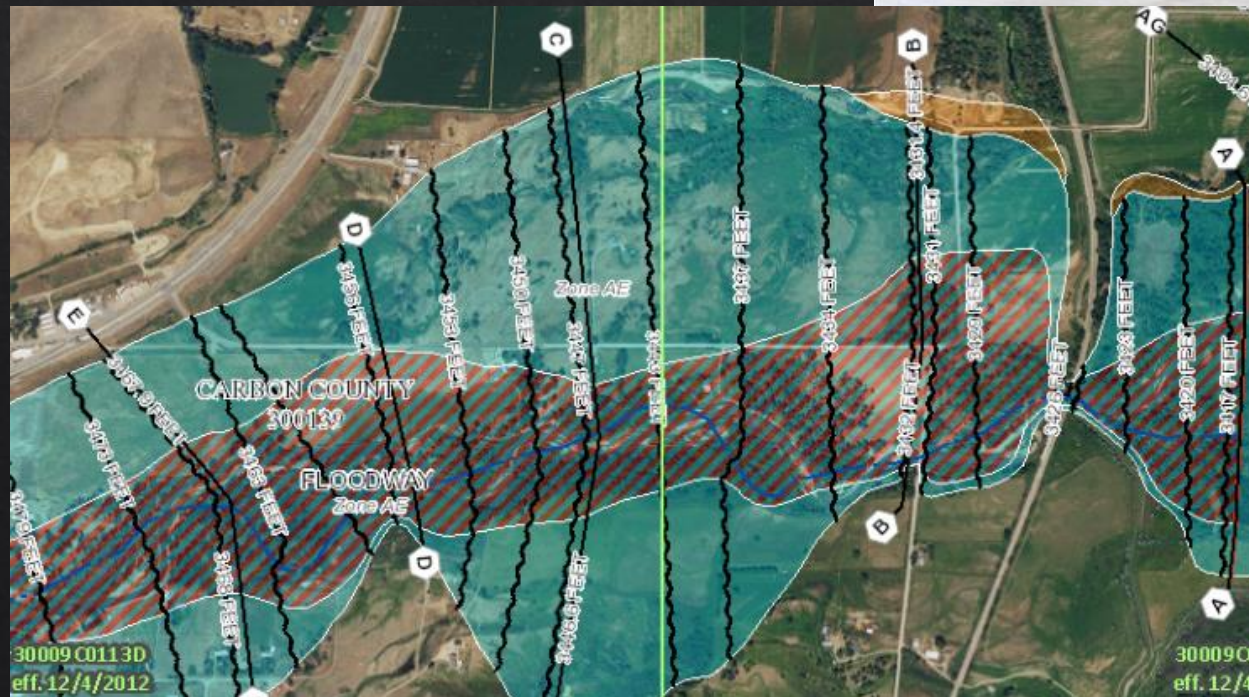
Carbon County Floodplain Mapping Project

October 3, 2019

Purpose:

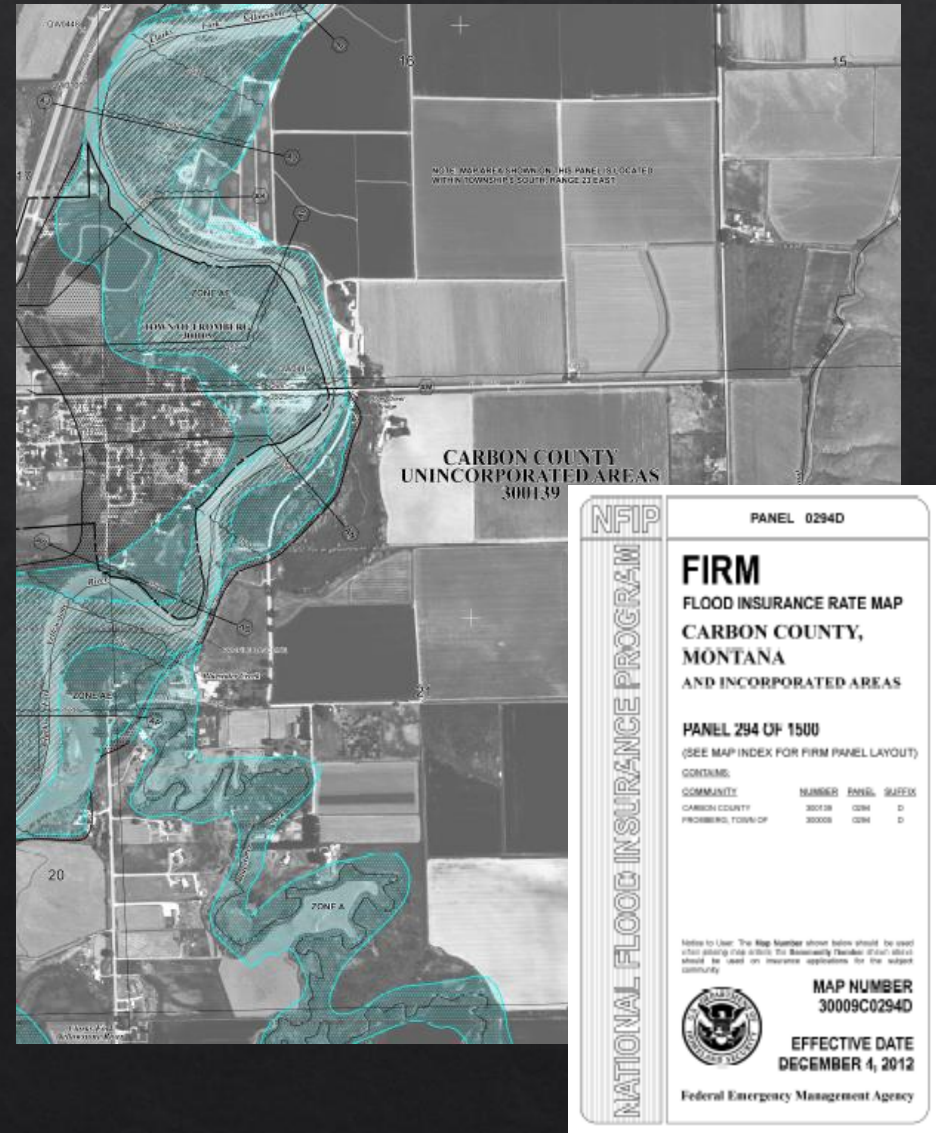
- Project Overview
- Review Project Team, Scope & Schedule
- Questions & Discussion

Identifying risk through mapping



Flood Insurance Rate Maps

- ◆ Indicate areas of flood risk
- ◆ Used for various purposes
 - ◆ Local floodplain regulations
 - ◆ Flood insurance premiums
 - ◆ Local emergency planning
- ◆ Need periodic updating



Understanding the Flood Study Process

Photo taken

Flood Study Steps

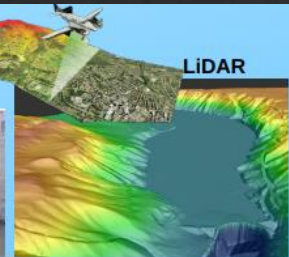
Step 1 - Survey: measurements are made of the topography around the river, along with any culverts, bridges, and road crossings. LiDAR uses an airplane to collect ground elevation over a large area, and ground survey supplements the airborne data.

Step 2 - Hydrology: determines how much water there will be in the river during a flood event. Data from stream gages will tell how many cubic feet of water per second the river will carry during the flood.

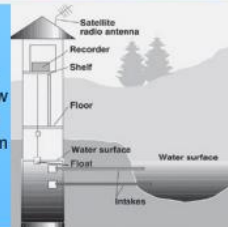
Step 3 - Hydraulics: once the first two steps are complete, calculations can show where the water will go during the flood. The elevation data is combined with the flood flow data to determine where the water will go when it overflows the channel.

Step 4 - Mapping (delineation): the results from step 3 are combined with the elevation data and official maps to see how far the water will spread out. The area shown to be underwater during the flood is the regulatory floodplain.

Step 1 - Survey: The type of the survey depends on the size of the study area and type of study.

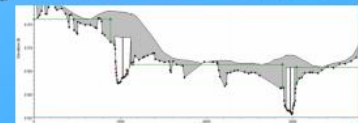
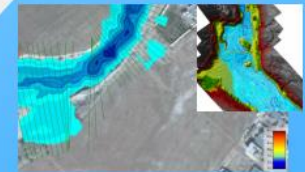


Step 2 - Hydrology: Stream gage stations are an important tool to determine flow rates. If nearby stream gages aren't available, gage data from a similar location is used to determine the flow rate.



Step 3 - Hydraulics:

- 5 main components to the model
- 1) Hydrology (stream flow data)
 - 2) Cross Sections (measurements of the river bottom at key locations)
 - 3) Roughness (thickness of vegetation, land cover, etc determined by surveyors)
 - 4) Structures (road crossings, culverts, bridges, etc.)
 - 5) Downstream conditions



Step 4 - Mapping (delineation):

The result will be the floodplain boundary and a depth grid identifying the shallower and deeper areas of flooding.

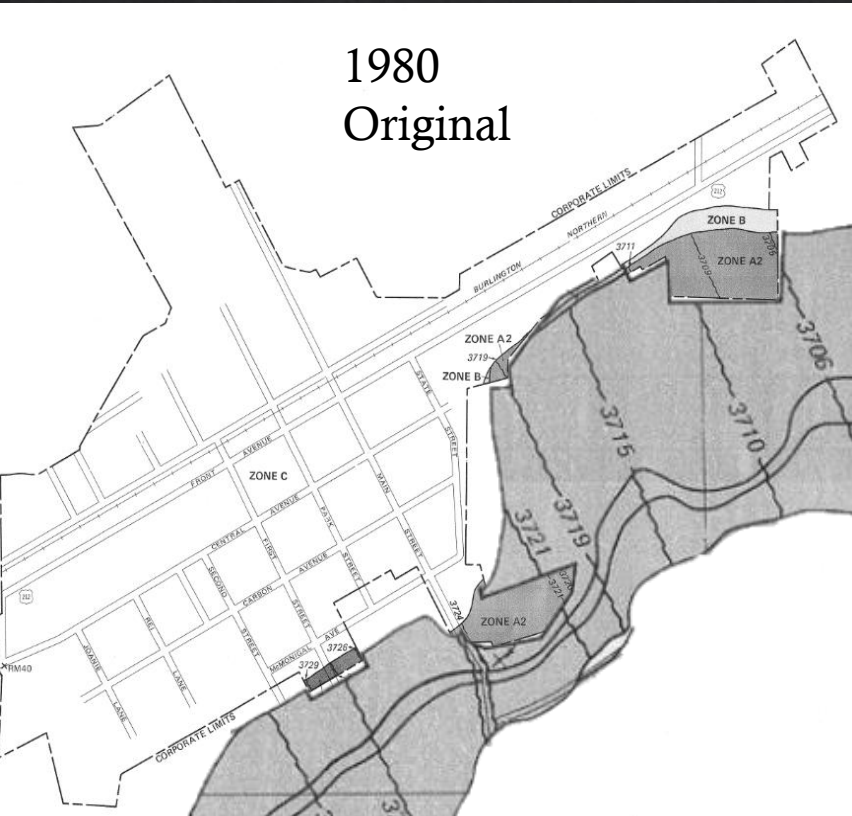


Carbon County - Existing Floodplain Maps

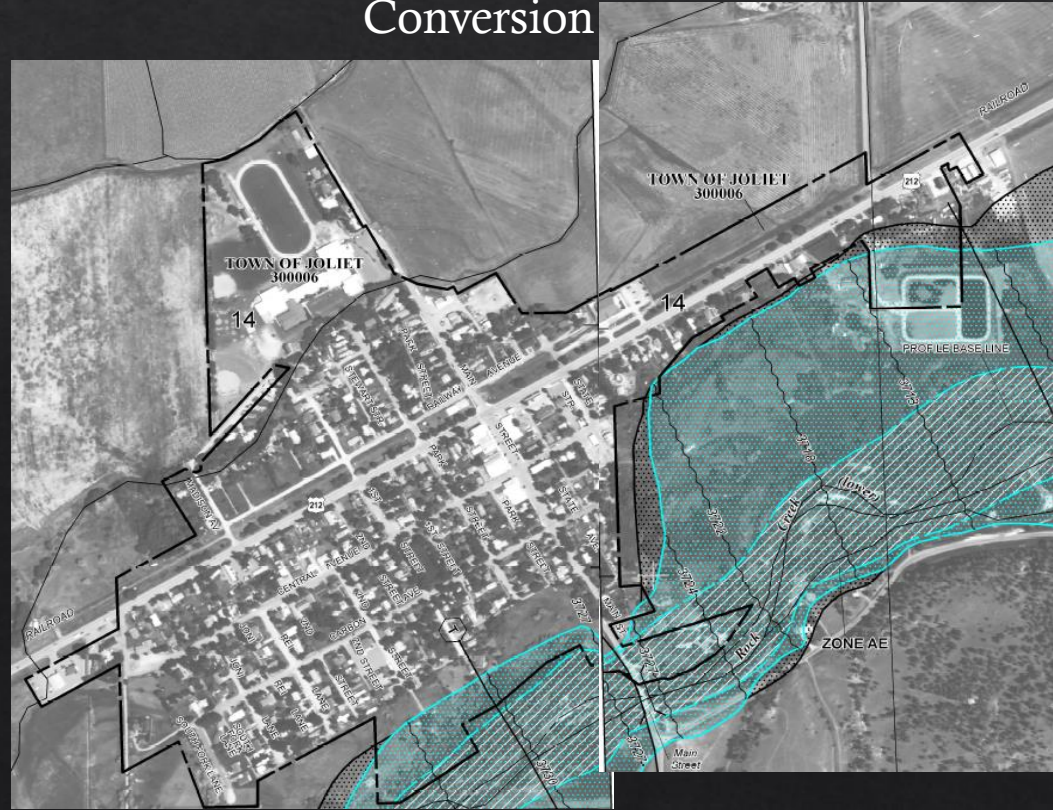
◆ 2012 Flood Insurance Rate Maps

- ◆ Based off data collected in 1977
- ◆ Maps were converted from paper to digital

1980
Original

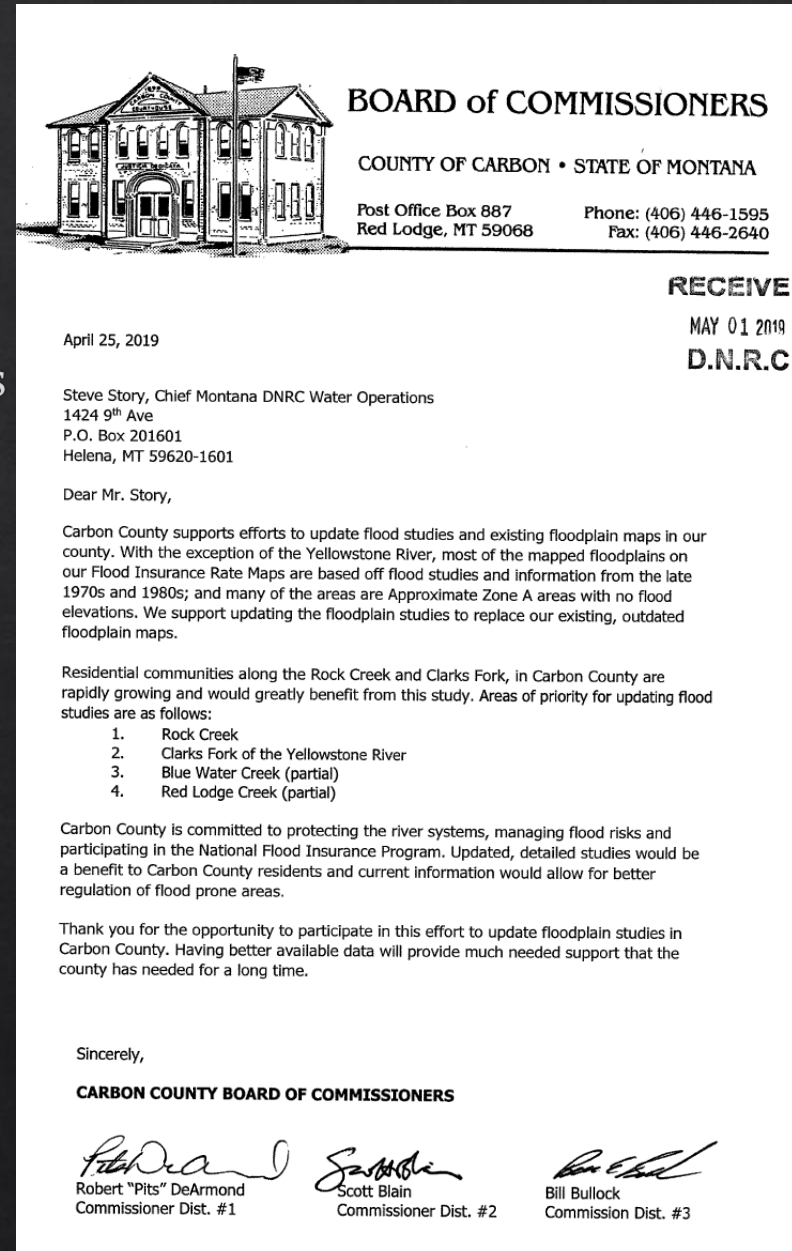


2012 Digital
Conversion



Project Background

- ◆ **Pre 2019-** County expressed a need for a new study
- ◆ **April 2019**– County submitted support Letter to DNRC to update floodplain maps
- ◆ **July 2019** – LiDAR collection began
- ◆ **July 2019** – DNRC applied for FEMA grant for Carbon County
- ◆ **September 2019** – FEMA grant awarded; contractor selection and contracts
- ◆ **Fall 2019** – Carbon County Project underway



Carbon County Floodplain Mapping Project

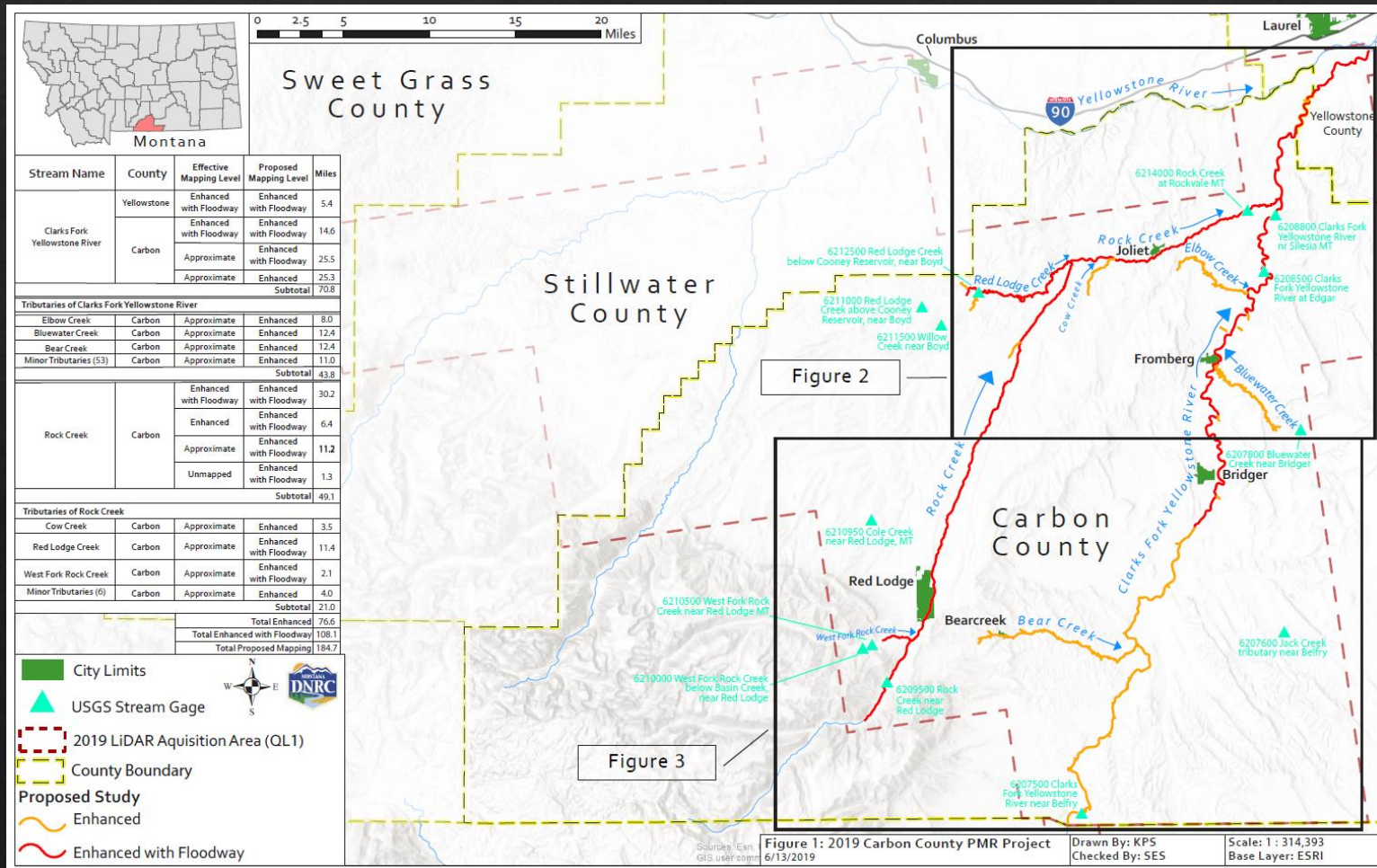
Existing Mapped Floodplains + additional areas requested

Update 184 stream miles

-108.1 miles w/ floodway

-76.6 miles no floodway

Project Funding:
\$2,139,085 FEMA
\$22,500 DNRC



Project Team – Carbon County project




- ◆ DNRC Floodplain Staff – Tiffany Lyden, Nadene Wadsworth, Steve Story, Katie Shank, Doug Brugger, Worby McNamee, Traci Sears

- ◆ Carbon County 

- ◆ FEMA Region VIII 

- ◆ DNRC Contractors:

- ◆ Topography/LiDAR – Aero-Graphics 

- ◆ Survey Work– Bathymetric survey- DOWL
Structure survey- DOWL



- ◆ Hydrology- USGS  and Pioneer

- ◆ Hydraulic Analysis and Floodplain Mapping

Rock Creek & Tributaries- Great West



Clarks Fork of the Yellowstone & Tributaries- DOWL

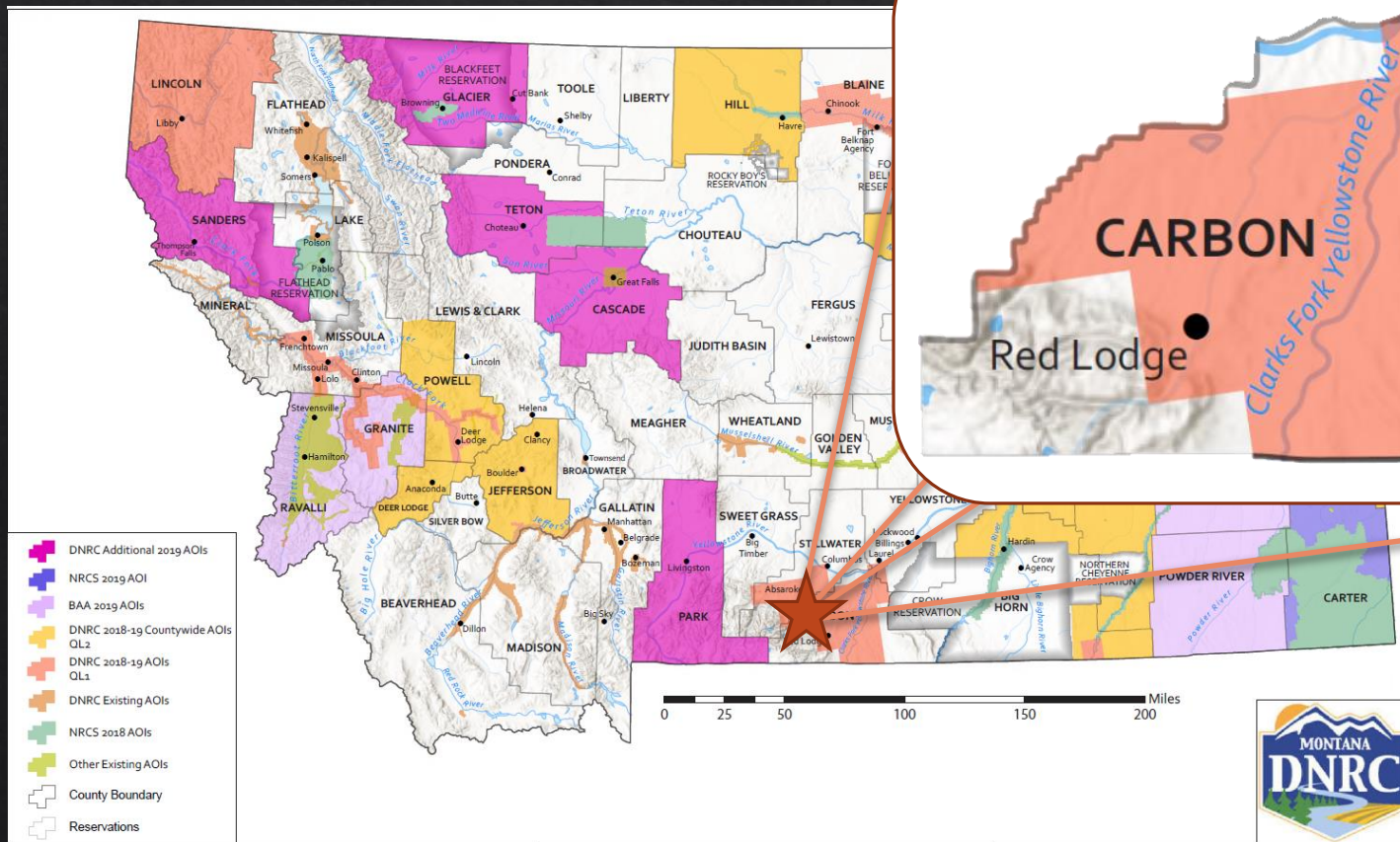


Project Scope

Topographic Data Collection

◆ Lidar Data Acquisition:

- ◆ LiDAR uses an airplane to collect ground elevation over a large area, and Ground Survey supplements the airborne data.



Project Scope

Survey Work

Provides in-stream and bridge/crossing data needed for hydraulic modeling and floodplain mapping.



July 24, 2019

Landowner Name
Street Address
City, ST, Zip

Dear Landowner,

The Montana Department of Natural Resources and Conservation (DNRC) has hired our firm to conduct survey work in Carbon, Stillwater, and Yellowstone Counties. The work includes surveying cross-sections across the Clarks Fork of the Yellowstone River, Rock Creek, Red Lodge Creek, Rosebud Creek, and the Stillwater River. The work will be used to increase the accuracy of the floodplain mapping in these areas. You can find more information about this on DNRC's website: www.floodplain.mt.gov/floodstudy.

We are sending you this courtesy notice because you have been identified as a landowner in the study area where field work may be performed. Cross-sections will be surveyed at bridges and approximately every half-mile along the river. The work will include surveying the stream channel and approximately 10-15 ft. above high water. Survey crews plan to start in August with work continuing through the fall of 2019.

If you do not wish for our survey personnel to be on your property, or if you would like to be contacted by phone or email prior to survey personnel being on your property, please notify us by contacting Greg Gabel with DOWL using the contact information below.

If you have any other questions or would like more information regarding this project, please contact Nadene Wadsworth with the DNRC using the contact information below.

Thank you,



DOWL
Greg Gabel, P.E., CFM
Project Manager
222 N 32nd Street Suite 700
Billings, MT 59101
ggabel@dowl.com
406-656-6399



Dept. of Natural Resources and Conservation (DNRC)
Nadene Wadsworth, Outreach Specialist
DNRC Floodplain Management Program
1424 9th Ave.
Helena, MT 59601
Nadene.Wadsworth@mt.gov
(406) 444-5918

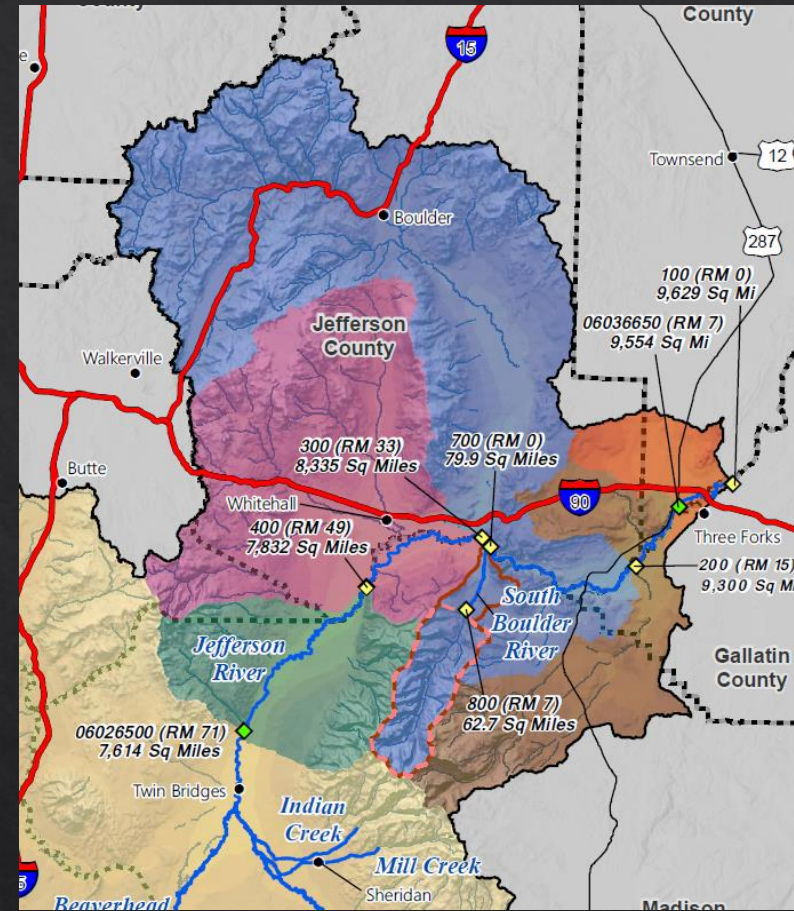
Project Scope

Hydrology

Determines how much water there will be in the river during a flood event. Data from stream gages will tell how many cubic feet per second the river will carry.



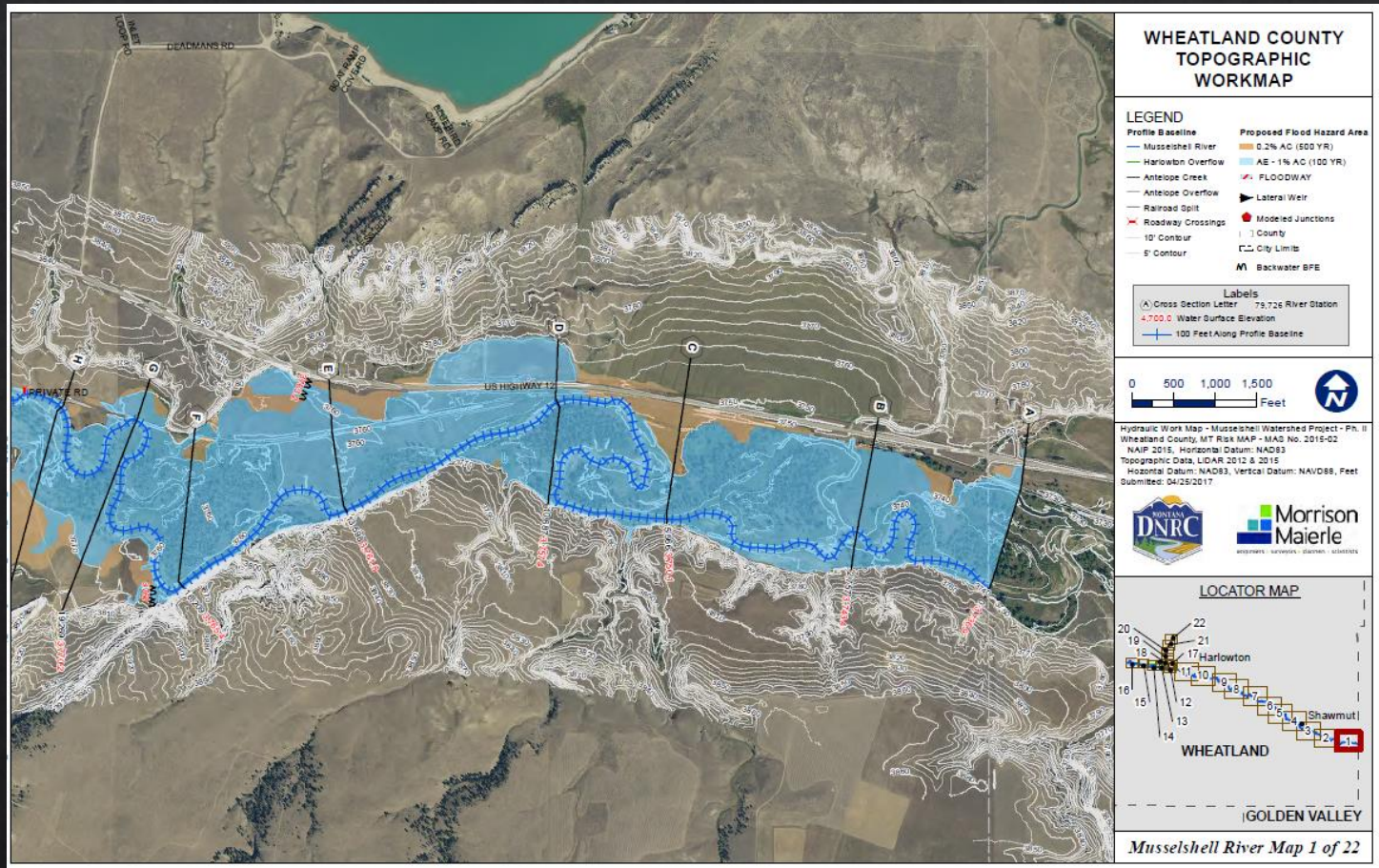
Photo Credit: Billings Gazette

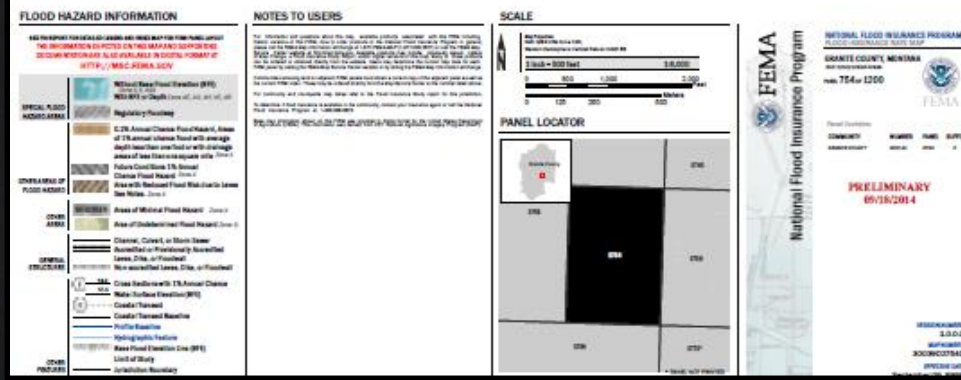


Project Scope

Hydraulic Analysis and Floodplain Mapping

Hydraulic modeling (where the water will go when it overflows the channel) and engineering to produce draft maps.





Estimated Project Schedule

Topographic (LiDAR) Data submission – Spring 2020

Survey Work- Summer 2020

Hydrology- Fall 2020

Hydraulics

Summer 2021

(Rock Creek & Tributaries)

Fall 2021

(Clarks Fork of the Yellowstone River & Tributaries)

Draft Maps –late 2021 (est.)

Public review of draft maps – early 2022 (est.)

FEMA Map Production/

Preliminary Maps - mid- late 2022 (est.)

Public review of preliminary maps – late 2022 (est.)

FEMA maps finalized – 2023 (est.)



Community
Contribution!!

Community Contribution

CITY OF DILLON, MONTANA

125 N. IDAHO
DILLON, MT 59725

TODD HAZELBAKER
DIRECTOR OF OPERATIONS

NEAL STRAUS
TREASURER



MICHAEL KLAKKEN
MAYOR

406-683-4245
FAX 406-683-6361

JANI OLSEN
CLERK

JAMES P. DOLAN
CITY ATTORNEY
406-988-0067

Dear Landowner,

The City of Dillon has been working with FEMA and the Montana Department of Natural Resources & Conservation (DNRC) to conduct new flood studies and update floodplain maps for Blacktail Deer Creek and the Beaverhead River. The new maps are intended to provide more reliable and detailed information about flood-prone areas along these waterways.

You are receiving this notification because proposed floodplain mapping changes could affect your property.

Visit this website www.floodplain.mt.gov/beaverhead to view the draft floodplain maps.

Attend one of our public open houses to get more information about this project and learn how it may affect your property:

Thursday, May 9th 5:00 – 7:00pm

Department of Natural Resources

840 N. Montana St

Dillon, MT

Monday, May 13th 5:00 – 7:00pm

Lima Town Hall

5 W Section Corner

Lima, MT

Staff from the DNRC Floodplain Program and the City will be on hand during the open houses to answer questions and provide an overview of the project. We look forward to seeing you there!

For more information about the overall project, or the draft maps, feel free to contact us directly:

Todd Hazelbaker
Dillon Floodplain Administrator
operations@dillonmt.org
406.683.4245

Tiffany Lyden
MT Dept of Natural Resources and Conservation
tyden@mt.gov
406.444.0599

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MAY 03 2014

D.N.R.C

Page 1



Discussion

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MT DNRC

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Thank You